

#### 4.4 Introduction to Trigonometric Equations

To solve trigonometric equations, isolate the trigonometric ratio and solve using the techniques from chapter 4.3.

##### Example 1:

Solve in the specified domain (No Calculator)

a.)  $8 \sin \theta + 3 = 1 + 6 \sin \theta, 0 \leq \theta < 2\pi$

b.)  $\sqrt{3} \sec \theta - 2 = 0, 0^\circ \leq \theta < 360^\circ$

**Try:**

Solve:

$\cot \theta + 3 = 2, 0 \leq \theta < 2\pi$

Reminder: When you see a squared trigonometric term, consider using factoring or quadratic equation:

**Example 2:**

a.)  $\tan^2 \theta - 4 \tan \theta = 0, 0 \leq \theta < 2\pi$

b.)  $\sin^2 \theta - 3 \sin \theta + 2 = 0, 0^\circ \leq \theta < 360^\circ$

**Try:**

$\cos^2 \theta - \cos \theta - 2 = 0, 0 \leq \theta < 2\pi$

Use a general solution when there is no given range, or if you are asked to use the general solution. The final solution needs to be as simple as possible; you may want to write a few answers to see if a pattern exists.

**Example 3: Solve in radians**

$2 \cos^2 \theta - \cos \theta - 1 = 0$